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EXAMINER	
YUCEL, I	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 27

Application Number: 08/711,961
Filing Date: September 06, 1996
Appellant(s): BRANSTROM ET AL.

Ann S. Hobbs
For Appellant

EXAMINER'S ANSWER

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 45-52 and 53-55 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,877,159 POWELL et al. 3-1999

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 45-55 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent 5,824,538. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application claims methods for delivery of exogenous DNA capable of being expressed in

an animal cell, while the patent claims are drawn to similar methods for mammalian cells, as well as the delivery vehicles for such methods. The claims in the instant application are obvious over the claims in the patent. Appellant has not yet submitted a proper Terminal Disclaimer and as such, this rejection is maintained.

Claims 45-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Powell et al.

Powell et al. broadly disclose and claim delivery of live, invasive bacteria which are attenuated by a variety of means and which also comprise a "eukaryotic expression cassette encoding genes." The purpose of the "eukaryotic expression cassette" that the animal cell infected by the invasive bacteria will express the cassette and produce an antigen which acts as a vaccine. At column 6, starting at line 48, Powell et al. teach that the present invention provides the first documentation of genetic exchange between live, invasive bacteria and animal cells. That is, once the bacteria deliver the eukaryotic expression cassette, it is the animal cells which express and produce the gene products (see line 57-2). Clearly, in order for the animal cell to express the eukaryotic expression cassette, the cassette must be released by the bacteria inside the animal cell—which is what happens upon lysis of the bacterial cell. It is further noted that because the bacteria cannot express the eukaryotic expression cassette, the expression observed by Powell et al. comes from the expression of the cassette by the animal cell.

This is the same concept used by Appellant in the instant application for the "delivery of exogenous DNA capable of being expressed in an animal cell." At columns 7 and 8 of the patent, Powell et al. teach that bacteria are used to deliver eukaryotic expression cassettes to animal cells or animal tissue and that the cassette is introduced and expressed in animal cells. At

column 24, example 4, Powell et al. teach the Δasd attenuating mutation of bacteria (*S. flexneri*) which results in lysis of the bacterial cells in the absence of DAP (D, L-α,ε-diaminopimelic acid). Since DAP is not found in eukaryotic animal cells, bacteria which are delivered to animal cells and/or tissues will lyse.

(11) Response to Argument

Appellant contends that the invention disclosed and claimed in Powell et al. does not contain each and every element of the presently claimed invention. In support of this contention, Appellant notes that the claims of Powell et al. are allegedly limited to methods involving a gene that encodes a vaccine antigen, expressed at detectable or effective levels and because no limitation exists in the instant claims, that Powell et al. fail to meet the limitation of the instant claims. Appellant's second argument is that each of the claims on appeal either explicitly or implicitly include a step of introducing said DNA into mutated bacteria and that the claims of Powell et al. allegedly omit said steps. Appellant's final arguments are that claim 53 recites a specific attenuating mutation, the inability to synthesize aspartate β-semialdehyde (asd) and methods of introducing exogenous DNA into the intestinal mucosal epithelium which are also not allegedly found in the Powell et al. claims. These arguments have been considered but are not found persuasive.

With regard to the first argument, it is noted that the claims of Powell et al. may contain additional limitations and still anticipate the instant claims. Claims 1-24 of Powell et al. are drawn to methods of introducing and expressing a gene in animal cells and methods for inducing an immune response in an animal wherein bacteria comprising a eukaryotic expression cassette

are administered to a mucosal surface of an animal . Quite analogously, the instant claims are drawn to methods for the delivery of exogenous DNA capable of being expressed in an animal cell (or in the case of claim 53, in a mucosal epithelium cell in an animal). That Powell et al. specify what the gene encodes does in no way make the reference any less anticipatory since the instant claims are merely drawn to a "DNA capable of being expressed in an animal cell." Clearly, the gene found in the eukaryotic expression cassette of Powell et al. reads on "DNA capable of being expressed in an animal cell." It is also of note that Appellant's own specification, at page 1, second paragraph clearly states that "[t]hese unique bacterial delivery systems therefor can be used as vaccines to prevent or treat infectious diseases..."

Appellant's second argument regarding the allegedly deficiency of the Powell et al. reference to include a step in which DNA is introduced into mutated bacteria is unpersuasive because of the following. Powell et al. explicitly claim methods in which live, invasive bacteria comprising a eukaryotic expression cassette are introduced to animal cells (see both claims 1 and 15 and their dependent claims, especially claims 6, 18 and 22). It is well known in the art that bacteria are **prokaryotic** organisms and do not **naturally** contain **eukaryotic** expression cassettes. Clearly, the claims of Powell et al. anticipate the instant claims because the only manner in which to obtain a bacterium (attenuated or otherwise) with a eukaryotic expression cassette is to introduce said cassette into said bacterium.

In response to Appellant's last arguments vis a vis the asd mutation and the methods of delivering exogenous DNA to mucosal epithelium cells, Powell et al. broadly claim methods using attenuated bacterial cells. They teach several means by which attenuation is achieved, including the Δasd attenuating mutation of bacteria (*S. flexneri*). Clearly indicating that Powell

et al. anticipate the instant claims. Claim 15 of Powell et al. and its dependent claims anticipate the invention of claims 53-55. Claim 15 is drawn to methods of inducing an immune response in an animal comprising infecting said animal with attenuated live invasive bacteria which contain a eukaryotic expression cassette encoding a gene which encodes a vaccine antigen and wherein said bacteria are administered to a mucosal surface of the animal. Dependent claim 18 is drawn to the use of attenuated Shigella species, the same bacteria that is recited in instant claim 53. At column 14, starting at line 45, Powell et al. provide a detailed discussion of mucosal surfaces. This discussion clearly teaches that using live bacterial vectors to deliver eukaryotic expression cassettes circumvents problems with natural barrier functions of mucosal compartments, including the intestinal surfaces. Therefore, claim 15 and its dependent claims fully anticipate claims 53-55.

Because the Powell et al. broadly teach and claim the instant invention, it remains that the Sizemore declaration is insufficient and inappropriate to overcome the rejection under 35 U.S.C. 102(e). It is noted that in the Office action mailed 03 March 2000, Appellant was advised that the Powell et al. patent can only be overcome by establishing priority of invention through interference proceedings. In that Office action Appellant also was referred to MPEP chapter 2300, specifically sections 2306 and 2308.02 and advised of 37 CFR 1.608. It is noted that Appellant has not submitted materials as per 37 CFR 1.608(b), thus the Sizemore declaration alone is not sufficient to satisfy 37 CFR 1.608 or to initiate said interference proceedings.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Art Unit 1636

ry
February 9, 2001

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